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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,335	07/09/2003	Vlasta Brusic Kaufman	98010CONDIV	1377
29050	7590	12/23/2005	EXAMINER	
STEVEN WESEMAN ASSOCIATE GENERAL COUNSEL, I.P. CABOT MICROELECTRONICS CORPORATION 870 NORTH COMMONS DRIVE AURORA, IL 60504			GOUDREAU, GEORGE A	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,335

Applicant(s)

KAUFMAN ET AL.

Examiner

George A. Goudreau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER

12-05'

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. This action will not be made final due to the new grounds of rejection.
2. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-38 of U.S. Patent No. 5,783,489.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

US patent 5,783,489 claims a method for cmp polishing a metal layer (i.e.-Al alloy, Ti, TiN) using a cmp slurry which is comprised of the following components:

-H₂O;

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- (0.5-3.0) wt. % of an organic acid (i.e.-succinic acid, etc.);
- an oxidizer (i.e.-H₂O₂, etc.); and
- a metal oxide abrasive particle (i.e.-fumed or precipitated silica, fumed or precipitated alumina, etc.)

This patent fails to claim the following aspects of applicant's claimed invention:

- the specific usage of a complexing agent in their cmp slurry;
- specific process parameters, which are claimed by the applicant;
- the specific usage of colloidal silica as the abrasive particle in the cmp slurry;
- the specific usage of tartaric acid as the organic acid in the cmp slurry; and
- the specific usage of a surfactant

It would have been inherent that the succinic acid in the cmp slurry which is taught above functions as a type of complexing agent since the same chemistry is involved as that which is claimed by the applicant. The examiner cites the case law listed below of interest to applicant in this regard.

In re Swinehart (169 U.S.P.Q. 226 (CCPA)) and In re Best (195 U.S.P.Q. 430 (CCPA)) state that when an examiner has reasonable basis for believing that functional characteristics asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be inherent characteristics of the prior art, the examiner possesses the authority to require an applicant to prove that the subject matter shown to be in the prior art does not possess the characteristics relied upon.

It would have been obvious to one skilled in the art to employ colloidal silica as the metal oxide abrasive particle in the cmp slurry taught above based upon the following. The usage of colloidal silica as the source of abrasive particles in a cmp slurry is conventional or at least well known in the prior art. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at

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least equivalent means for supply abrasive particles in the cmp slurry, which is taught above to the specific means, which are taught above.

It would have been obvious to one skilled in the art to use a surfactant in the cmp slurry, which is taught above based upon the following. The usage of a surfactant in a cmp slurry is conventional or at least well known in the cmp polishing arts. (The examiner takes official notice in this regard.) Further, this would provide a desirable means for enhancing the cmp polishing of a substrate by improving the wetting of the surface of the substrate with the cmp slurry.

It would have been obvious to one skilled in the art to employ tartaric acid as the organic acid in the cmp slurry, which is taught above, based upon the following. The usage of tartaric acid as an organic acid in a cmp slurry is conventional or at least well known in the cmp polishing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supplying an organic acid in the cmp slurry, which is taught above to the specific means, which are taught above.

It would have been prima facie obvious to employ any of a variety of different cmp polishing process parameters in the cmp polishing process taught above. These are all well-known variables in cmp polishing art, which are known to affect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undue experimentation, which would have been indicative of unexpected results.

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Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon In re Aller as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. ≡ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters, which are claimed by the applicant, are results effective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

5. Claims 1-15 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 5,858,813.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

US patent 5,858,813 claims a method for cmp polishing a metal layer (i.e.-Al, an Al alloy, Ti, TiN, TiW, Ta) using a cmp slurry which is comprised of the following components:

- H₂O;
- a surfactant;
- an organic acid (i.e.-succinic acid, etc.);
- an oxidizer (i.e.-H₂O₂, etc.); and
- a metal oxide abrasive particle (i.e.-fumed or precipitated silica, fumed or precipitated alumina, etc.)

This patent fails to claim the following aspects of applicant's claimed invention:

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- the specific usage of a complexing agent in their cmp slurry;
- specific process parameters, which are claimed by the applicant; and
- the specific usage of colloidal silica as the abrasive particle in the cmp slurry

It would have been inherent that the succinic acid in the cmp slurry which is taught above functions as a type of complexing agent since the same chemistry is involved as that which is claimed by the applicant. The examiner cites the case law listed above of interest to applicant in this regard.

It would have been obvious to one skilled in the art to employ colloidal silica as the metal oxide abrasive particle in the cmp slurry taught above based upon the following. The usage of colloidal silica as the source of abrasive particles in a cmp slurry is conventional or at least well known in the prior art. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supply abrasive particles in the cmp slurry, which is taught above to the specific means, which are taught above.

It would have been prima facie obvious to employ any of a variety of different cmp polishing process parameters in the cmp polishing process taught above. These are all well-known variables in cmp polishing art, which are known to affect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undue experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the

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cmp polishing process which is taught above based upon In re Aller as cited above.

Further, all of the specific process parameters, which are claimed by the applicant, are results effective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

6. Claims 1-15 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 17-26 of U.S. Patent No. 5,980,775.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

US patent 5,980,775 claims a method for cmp polishing a metal layer using a cmp slurry which is comprised of the following components:

- H₂O;
- an organic acid stabilizer (i.e.-citric acid, etc.);
- an oxidizer (i.e.-H₂O₂, etc.); and
- a metal oxide abrasive particle (i.e.- silica or alumina, etc.)

This patent fails to claim the following aspects of applicant's claimed invention:

- the specific usage of a surfactant;
- the specific usage of a complexing agent in their cmp slurry;
- specific process parameters, which are claimed by the applicant; and
- the specific usage of colloidal silica as the abrasive particle in the cmp slurry

It would have been inherent that the citric acid in the cmp slurry which is taught above functions as a type of complexing agent since the same chemistry is involved as

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that which is claimed by the applicant. The examiner cites the case law listed above of interest to applicant in this regard.

It would have been obvious to one skilled in the art to employ colloidal silica as the metal oxide abrasive particle in the cmp slurry taught above based upon the following. The usage of colloidal silica as the source of abrasive particles in a cmp slurry is conventional or at least well known in the prior art. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supply abrasive particles in the cmp slurry, which is taught above to the specific means, which are taught above.

It would have been obvious to one skilled in the art to use a surfactant in the cmp slurry, which is taught above based upon the following. The usage of a surfactant in a cmp slurry is conventional or at least well known in the cmp polishing arts. (The examiner takes official notice in this regard.) Further, this would provide a desirable means for enhancing the cmp polishing of a substrate by improving the wetting of the surface of the substrate with the cmp slurry.

It would have been prima facie obvious to employ any of a variety of different cmp polishing process parameters in the cmp polishing process taught above. These are all well-known variables in cmp polishing art, which are known to affect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undue experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon In re Aller as cited above. Further, all of the specific process parameters, which are claimed by the applicant, are results effective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

7. Claims 1-15 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-18 of U.S. Patent No. 6,068,787. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

US patent 6,068,787 claims a method for cmp polishing a metal layer (i.e.-W) using a cmp slurry which is comprised of the following components:

- H₂O;
- an organic acid stabilizer (i.e.-malonic acid, etc.);
- an oxidizer (i.e.-H₂O₂, etc.); and
- a metal oxide abrasive particule (i.e.- silica, etc.)

This patent fails to claim the following aspects of applicant's claimed invention:

- the specific usage of a surfactant;
- the specific usage of a complexing agent in their cmp slurry;
- specific process parameters, which are claimed by the applicant; and
- the specific usage of colloidal silica as the abrasive particle in the cmp slurry

It would have been inherent that the malonic in the cmp slurry, which is taught above functions as a type of complexing agent since the same chemistry, is involved as that which is claimed by the applicant. The examiner cites the case law listed above of interest to applicant in this regard.

It would have been obvious to one skilled in the art to employ colloidal silica as the metal oxide abrasive particle in the cmp slurry taught above based upon the following. The usage of colloidal silica as the source of abrasive particles in a cmp slurry is conventional or at least well known in the prior art. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supply abrasive particles in the cmp slurry, which is taught above to the specific means, which are taught above.

It would have been obvious to one skilled in the art to use a surfactant in the cmp slurry, which is taught above based upon the following. The usage of a surfactant in a cmp slurry is conventional or at least well known in the cmp polishing arts. (The examiner takes official notice in this regard.) Further, this would provide a desirable means for enhancing the cmp polishing of a substrate by improving the wetting of the surface of the substrate with the cmp slurry.

It would have been prima facie obvious to employ any of a variety of different cmp polishing process parameters in the cmp polishing process taught above. These are all well-known variables in cmp polishing art, which are known to affect both the rate and the quality of the cmp polishing process. Further, the selection of particular values

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for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon In re Aller as cited above. Further, all of the specific process parameters, which are claimed by the applicant, are results effective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

8. Claims 1-15 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No.6,316,366. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following.

US patent 6,316,366 claims a method for cmp polishing a metal layer (i.e.-Ti, an Al alloy, etc.) using a cmp slurry, which is comprised of the following components:

- H₂O;
- succinic acid;
- an oxidizer (i.e.-H₂O₂, etc.); and
- a metal oxide abrasive particle (i.e.- precipitated or fumed silica, precipitated or fumed alumina, etc.)

This patent fails to claim the following aspects of applicant's claimed invention:

- the specific usage of a surfactant;
- the specific usage of a complexing agent in their cmp slurry;

- specific process parameters, which are claimed by the applicant; and
- the specific usage of colloidal silica as the abrasive particle in the cmp slurry

It would have been inherent that the succinic acid in the cmp slurry which is taught above functions as a type of complexing agent since the same chemistry is involved as that which is claimed by the applicant. The examiner cites the case law listed above of interest to applicant in this regard.

It would have been obvious to one skilled in the art to employ colloidal silica as the metal oxide abrasive particle in the cmp slurry taught above based upon the following. The usage of colloidal silica as the source of abrasive particles in a cmp slurry is conventional or at least well known in the prior art. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supply abrasive particles in the cmp slurry, which is taught above to the specific means, which are taught above.

It would have been obvious to one skilled in the art to use a surfactant in the cmp slurry, which is taught above based upon the following. The usage of a surfactant in a cmp slurry is conventional or at least well known in the cmp polishing arts. (The examiner takes official notice in this regard.) Further, this would provide a desirable means for enhancing the cmp polishing of a substrate by improving the wetting of the surface of the substrate with the cmp slurry.

It would have been prima facie obvious to employ any of a variety of different cmp polishing process parameters in the cmp polishing process taught above. These are all well-known variables in cmp polishing art, which are known to affect both the rate

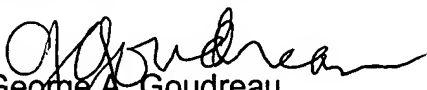
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and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific cmp polishing process parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon In re Aller as cited above. Further, all of the specific process parameters, which are claimed by the applicant, are results effective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

9. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
Art Unit 1763